

CLAIM SET AS AMENDED

Sub B1 → **Claim 1** (Currently Amended) A method of testing a bit error rate for each of N optical communication channels in a wavelength division multiplexed optical communication system having N optical transmitters communicating to N optical receivers via N communication channels, the method comprising:

AG Cont. cascading said N optical communication channels such that an electrical output of an optical receiver i for an optical communication channel i is connected to an input of an optical transmitter $i + 1$ for an optical communication channel $i + 1$, for all values of i from one to $N-1$, so as to form a continuous cascade of optical transmitter/receiver pairs;

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel;

supplying the bit error rate test signal from an output of optical receiver N to the bit error rate tester;

detecting errors in the bit error rate test signal received by the bit error rate tester and calculating therefrom a measured bit error rate;

comparing the measured bit error rate with a predetermined system bit error rate threshold;

indicating that the bit error rate for each of the N optical communication channels is less than a specified bit error rate value when the measured bit error rate is less than or equal to the predetermined system bit error rate threshold; and

monitoring a signal quality for the bit error rate test signal at each of the N optical transmitters and N optical receivers when the measured bit error rate is greater than the predetermined system bit error rate threshold to thereby determine which of the N optical communication channels ~~has~~ is greater/less than a specified bit error rate value.

Claim 2 (Original) The method of claim 1, wherein said predetermined system bit error rate is equal to the specified bit error rate for each of N optical communication channels.

Claim 3 (Currently Amended) The method of claim 1, wherein said monitoring said signal quality includes a bit parity check that is independent of the bit error rate test signal.

Claim 4 (Currently Amended) The method of claim 3, wherein said monitoring includes monitoring a bit interleave parity for said bit

parity check on each electrical signal in the N optical
communication channels transmitter/receiver pairs.

Claim 5 (New) A method for performing a bit error rate test for a plurality of optical communication channels of a wavelength division optical communication system having transmitters and receivers, comprising:

supplying a bit error rate test signal from a bit error rate tester to an input for a first optical transmitter for a first optical communication channel of said plurality of optical communication channels arranged in a continuous cascade of a plurality of transmitter/receiver pairs;

receiving the bit error test signal at the bit error rate tester from a final optical receiver;

detecting a measured bit error rate; and

identifying at least one faulty communication channel from said plurality of optical communication channels by performing a bit parity check for each transmitter/receiver pair because the measured bit error rate is below a predetermined system bit error rate threshold.

Claim 6 (New) The method of claim 5, further comprising monitoring a signal quality for the at least one faulty communication channel using an internal performance monitor.

Claim 7 (New) The method of claim 6, wherein said internal performance monitor checks a signal transmitted through the at least one faulty communication channel.

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Claim 8 (New) The method of claim 5, further comprising passing said bit error rate test signal through said plurality of optical communication channels.

Claim 9 (New) A system for testing optical communication channels for wavelength division multiplexed optical communication using transmitters and receivers, comprising:

a bit error rate tester to generate a bit error rate test signal, wherein the bit error rate test signal is transmitted over a plurality of optical communication channels arranged in a continuous cascade of optical transmitter/receiver pairs;

said tester determining a measured bit error rate, wherein said tester determines whether said measured bit error rate is greater than a predetermined bit error rate threshold for said plurality of optical communication channels; and

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a diagnostic analyzer to analyze diagnostic output signals from said transmitters and said receivers and to identify at least one faulty communication channel from said optical transmitter/receiver pairs using a bit parity check because said measured bit error rate is greater than said predetermined bit error rate threshold.

Claim 10 (New) The system of claim 8, further comprising an internal performance monitor coupled to said diagnostic analyzer.

Claim 11 (New) The system of claim 9, wherein said internal performance monitor includes an error monitoring unit.
